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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/613,541	07/07/2000	Atsushi Nakamura	501.34189R00	9061

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EXAMINER

WILLIAMS, ALEXANDER O

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 06/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/613,541

Applicant(s)

NAKAMURA ET AL.

Examiner

Alexander O Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-90 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-90 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Serial Number: 09/613541 Attorney's Docket #: 501.34189R))

Filing Date: 7/7/2000;

Applicant: Nakamura et al.

Examiner: Alexander Williams

Applicant's Response in Paper # 7, filed 4/16/02 has been acknowledged.

Claims 1-25 are allowed over the prior art of record.

The reissue oath/declaration filed with this application is defective because it fails to identify at least one error which is relied upon to support the reissue application. See 37 CFR 1.175(a)(1) and MPEP § 1414. The error claimed by Applicant of the original claim 10 is improperly dependent on itself could be done by certification corrections without a reissue.

The reissue oath/declaration filed with this application is defective because the error which is relied upon to support the reissue application is not an error upon which a reissue can be based. See 37 CFR 1.175(a)(1) and MPEP § 1414. The error claimed by Applicant of the original patented claimed less than applicants were entitled to claim by failing to claim the subject matter set forth in broadened new claims 26 to 90 is broad and have no specific error detailed. The error MUST be specific.

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 08/570646, filed on 12/1/1995.

The preliminary Amendment to the specification is not in proper form (see 37 CFR 1.173). Further, the content of the amendment to the specification is not

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adequate. Applicant needs to clearly point out that there are more than one reissue application for the same patent. See In re Graff, 42 USPQ2D 1471

Claims 25-38 are rejected under 35 U.S.C. § 251. See MPEP 1414. The original declaration is defective and does not comply with all of the requirements of 37 CFR 1.63 and 37 CFR 1.175. The declaration does not specify the "at least one" error.

The oath or declaration must identify at least one error being relied upon as a basis for the reissue and that it is indeed an appropriate error for reissue (37 CFR 1.175 (a) (1)). For example, "failure to include the flowing claims in the original patent..." is not an acceptable statement of an error. Specific changes or amendments to the claims must be identified. If new claims are presented, their differences from the originals claims must be pointed out. See MPEP 1414.

Furthermore, this error should have been corrected in the patent application. Also, the declaration must specify the foreign priority.

Unless supplied in an application date sheet (ADS) (See 37 CFR 1.76), the oath or declaration must identify the foreign application, if any, on which foreign priority is being claimed by specifying the application number, country, day, month, and year of its filing as required by 37 CFR 1.63©. If the original patent contains a claim for foreign priority, such claim must be repeated in the reissue application in order to retain priority to the earlier effective filing date. MPEP 1417.

Note: All oaths must be properly notarized and declarations must include declarant's warning perjury and jeopardy to the validity of the patent.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

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The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claim language in claims 30, 35 and 36 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Double Patenting

3. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101, which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

5. Claims 26 to 38 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 27 of copending Application No.10/105236. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

The disclosure is objected to because of the following informalities: The related application information should be updated.

Appropriate correction is required.

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Claims 29, 34 and 35 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 29, it is unclear and confusing to what is meant by and what shows "said slit is tapered so that an opening on said second surface of substrate is greater than an opening on said first surface of said substrate."

In claim 34, it is unclear and confusing to what is meant by "wherein said substrate has land portions and conductors formed between said land portions and said electrode pads, wherein a width of each of said land portions is larger than a width of each of said conductors, wherein said land portions, said conductors and said electrode pads are integrally formed with one another on said second surface of said substrate, and wherein said bump electrodes are disposed on said land portions, respectively." Where in this shown in the drawing and detailed in the specification?

Any of claims 30, 34 and 35 not specifically addressed above are rejected as being dependent on one or more of the claims which have been specifically objected to above.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application

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by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 26 to 29, 32, 33, 37, 38 to 42, 44, 45, 48 to 58, 61 to 69, 71, 72, 75 to 82 and 84 to 90 are rejected under 35 U.S.C. § 102(e) as being anticipated by Masukawa (U.S. Patent # 5,753,974).

For example, in claim 26 and similar claims 39, 52, 66, and 80, Masukawa (figures 3a to 7) specifically **figure 6B** show a semiconductor device comprising: a semiconductor pellet **1** of a quadrilateral shape having bonding pads **6a,6b,7** formed in a main surface thereof, said semiconductor pellet having a first pair of opposed edges extending in a first direction and a second pair of opposed edges extending in a second direction which intersects said first direction, wherein at least some of said bonding pads **6a,6b,7** extend in said first direction to form a row bonding pads; a substrate **4,3** having a first surface (**top of 4**), a second surface (**bottom of 4**) opposite to said first surface, electrode pads formed on said second surface and a slit **4C** passing through said substrate from said first surface to said second surface and extending in said first

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direction, said semiconductor pellet being disposed on said first surface of said substrate such that said main surface of said semiconductor pellet is faced to said first surface of said substrate and said bonding pads are arranged in said slit in a plan view, said electrode pads including first second electrode pads arranged at the other side of said slit in said second direction; bonding wires **5,5'** electrically connecting said electrode pads of said substrate with said bonding pads of said semiconductor pellet via said slit, said bonding wires including first bonding wires connected to said first electrode pads and second bonding wires connected to said second electrode pads; bump electrodes **9** being disposed on said second surface of said substrate and being electrically connected to said electrode pads of said substrate, said bump electrodes including first bump electrodes electrically connected to said first electrode pads arranged at said one side of said slit and second bump electrodes electrically connected to said second electrode pads and arranged at the other side of said slit, each of said first and second bump electrodes being arranged in both said first and second directions to form a matrix in said plain view, respectively; and a resin sealing body **10** sealing said bonding wires and said main surface of said semiconductor pellet exposed from said slit.

In claim 27, Masukawa show said row of bonding pads **61,6b,7** is disposed at a substantially central area between said first pair of opposed edges of said semiconductor pellets.

In claim 28, Masukawa show wherein said semiconductor pellet **1** has a rectangular shape, and wherein said first pair of opposed edges correspond to a pair of longer edges and said second pair of opposed edges correspond to a pair of shorter edges.

In claim 31, Masukawa show wherein said substrate **4** is formed of a glass fiber impregnated with epoxy resin (see column 2, lines 65-67)

In claim 32, Masukawa show wherein said bonding wires **5** are formed of gold (see column 4, lines 5-10).

In claim 37, Masukawa show wherein said substrate **4,3** has a periphery which protrudes outwardly from said first and second pairs of opposed edges of said semiconductor pellet **1**, wherein said first surface of said periphery of said substrate and said semiconductor pellet are sealed with a resin sealing body **10**, and wherein a rear surface (back of 1) of said semiconductor pellet opposite to said main surface is exposed from said resin sealing body.

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In claim 38, Masukawa show wherein said bumps electrodes **9** are arranged on said second surface of said substrate (**bottom of 4,3**) that overlaps with said semiconductor pellet in said plane view and on said second surface of substrate at said periphery.

Claims 26 to 29, 34, 35, 36, 42, 48 to 56, 61 to 69, 75 to 82 and 86 to 90 are rejected under 35 U.S.C. § 102(b) as being anticipated by Hinrichsmeyer et al. (U.S. Patent # 4,996,587).

For example, in claim 26 and similar claims 39, 52, 66, and 80, Hinrichsmeyer et al. (figures 1 to 7) specifically **figure 5** show a semiconductor device **20** comprising: a semiconductor pellet **19** of a quadrilateral shape having bonding pads **21** formed in a main surface thereof, said semiconductor pellet having a first pair of opposed edges extending in a first direction and a second pair of opposed edges extending in a second direction which intersects said first direction, wherein at least some of said bonding pads **21** extend in said first direction to form a row bonding pads; a substrate **10** having a first surface, a second surface opposite to said first surface, electrode pads formed on said second surface and a slit **13** passing through said substrate from said first surface to said second surface and extending in said first direction, said semiconductor pellet being disposed on said first surface of said substrate such that said main surface of said semiconductor pellet is faced to said first surface of said substrate and said bonding pads are arranged in said slit in a plan view, said electrode pads including first second electrode pads arranged at the other side of said slit in said second direction; bonding wires **22** electrically connecting said electrode pads of said substrate with said bonding pads of said semiconductor pellet via said slit, said bonding wires including first bonding wires connected to said first electrode pads and second bonding wires connected to said second electrode pads; bump electrodes **25** being disposed on said second surface of said substrate and being electrically connected to said electrode pads of said substrate, said bump electrodes including first bump electrodes electrically connected to said first electrode pads arranged at said one side of said slit and second bump electrodes electrically connected to said second electrode pads and arranged at the other side of said slit, each of said first and second bump electrodes being arranged in both said first and second directions to form a matrix in said plain view, respectively; and a resin sealing body **28** sealing said bonding wires and said main surface of said semiconductor pellet exposed from said slit.

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In claim 27, Hinrichsmeyer et al. show said row of bonding pads **21** is disposed at a substantially central area between said first pair of opposed edges of said semiconductor pellets.

In claim 28, Hinrichsmeyer et al. show wherein said semiconductor pellet **19** has a rectangular shape, and wherein said first pair of opposed edges correspond to a pair of longer edges and said second pair of opposed edges correspond to a pair of shorter edges.

In claim 29, Hinrichsmeyer et al. show wherein said slit **13** tapered so that an opening on said second surface of substrate is greater than an opening on said first surface of said substrate.

In claim 34, Hinrichsmeyer et al. show wherein said substrate has land portions **12** and conductors **12** formed between said land portions and said electrode pads **21**, wherein a width of each of said land portions is larger than a width of each of said conductors, wherein said land portions, said conductors and said electrode pads are integrally formed with one another on said second surface of said substrate, and wherein said bump electrodes are disposed on said land portions, respectively

In claim 35, Hinrichsmeyer et al. show wherein said substrate **10** is formed of a single layer structure that has conductors arranged only on said second surface of said substrate.

Initially, and with respect to claims 33, 34, 46, 47, 59, 60, 73 and 74, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hira, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

Claims 33, 34, 46, 47, 59, 60, 73 and 74 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Masukawa (U.S. Patent # 5,753,974).

As to the grounds of rejection under section 103, see MPEP § 2113.

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Claim 33, 34, 46, 47, 59, 60, 73 and 74 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hinrichsmeyer et al. (U.S. Patent # 4,996,587).

As to the grounds of rejection under section 103, see MPEP § 2113.

Claims 30, 43, 56, 70 and 83 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Masukawa (U.S. Patent # 5,753,974) in view of linuma (U.S. Patent # 4,688,074).

Masukawa show the features of the claimed invention as detailed above, but fail to explicitly show that the bump electrodes are formed of a Pb-Sn alloy.

linuma is cited for connecting structure for a display device. linuma (figures 5 and 6) specifically figure 5 discloses bump electrodes are formed of a Au bump or Pb-Sn alloy (see column 2, lines 63-65) for the purpose of connecting terminals I such a large capacity displav device.

Therefore, it would have been obvious to one of ordinary skill in the art to use linuma's Au or Pb-Sn bump to modify Masukawa's Au bump for the purpose of connecting terminals in such a large capacity displav device.

Claims 30, 43, 56, 70 and 83 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hinrichsmeyer et al. (U.S. Patent # 4,996,587) in view of linuma (U.S. Patent # 4,688,074).

Hinrichsmeyer et al. show the features of the claimed invention as above, but fail to explicitly show that the bump electrodes are formed of a Pb-Sn alloy.

detailed linuma is cited for connecting structure for a display device. linuma (figures 5 and 6) specifically figure 5 discloses bump electrodes are formed of a Au bump or Pb-Sn alloy (see column 2, lines 63-65) for the purpose of connecting terminals I such a large capacity displav device.

Therefore, it would have been obvious to one of ordinary skill in the art to use linuma's Au or Pb-Sn bump to modify Hinrichsmeyer et al.'s bump for the purpose of connecting terminals in such a large capacity displav device.

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The listed references are cited as of interest to this application, but not applied at this time.


Field of Search	Date
U.S. Class and subclass: 257/778,777,780,737,784,673,696,698,680,773	5/14/03 6/17/03
Other Documentation: foreign patents and literature in 257/778,777,780,737,784,673,696,698,680,773	5/14/03 6/17/03
Electronic data base(s): U.S. Patents EAST	5/14/03 6/17/03

Papers related to this application may be submitted to Technology Center 2800 by facsimile transmission. Papers should be faxed to Technology Center 2800 via the Technology Center 2800 Fax center located in Crystal Plaza 4-5B15. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center 2800 Fax Center number is (703) 308-7722 or 24. Only Papers related to Technology Center 2800 APPLICATIONS SHOULD BE FAXED to the GROUP 2800 FAX CENTER.

Any inquiry concerning this communication or any earlier communication from the examiner should be directed to ***Examiner Alexander Williams*** whose telephone number is **(703) 308-4863**.

Any inquiry of a general nature or relating to the status of this application should be directed to the ***Technology Center 2800 receptionist*** whose telephone number is **(703) 308-0956**.

6/17/03



Primary Examiner
Alexander O. Williams